LOUISIANA Conservationist

LOUISIANA WILD LIFE AND FISHERIES COMMISSION

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Conservation Pledge

I give my pledge as an American to save and faithfully to defend from waste the natural resources of my country—its soil and minerals, its forests, waters and wildlife

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The Canada goose shown on the cover is considered by waterfowlers throughout the country to be one of the most highly-prized geese. This fall, the Louisiana Wild Life and Fisheries Commission transplanted 1,600 Canada geese from Swan Lake National Wildlife Refuge in Missouri to Rockefeller Wildlife Refuge. This marked the start of an intensive program to rebuild large flocks of resident Canada geese in Louisiana.

(Photo by Jack Britt)

LOUISIANA

Conservationist

LOUISIANA WILD LIFE AND FISHERIES COMMISSION

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EDITORIAL

NOW THAT 1963-64 hunting seasons are racing to a close it seems appropriate to stress the need for land acquisition for public hunting. While the majority of Louisiana hunters can look back on a most satisfactory season, there are some hunters who were confronted upon occasion with the startling fact that they were forced to look somewhere else to hunt. Favorite spots of previous years were being diverted to new land use.

The state's game management areas, constantly being developed by the Louisiana Wild Life and Fisheries Commission, provided a half-million acres of public hunting land. That's roughly the amount of land under management. It is distributed over the state in tracts both large and small, offering a wide variety of habitat and involving several species of game.

Basically, these areas are managed to provide more hunting opportunity. Of great importance, they serve as a demonstration of the feasibility of producing a huntable game population through application of game management techniques.

The question, certainly in the minds of several hundred thousand Louisiana hunters, is "Is this enough land?"

When population studies are examined and when research clearly indicates that a fast-growing population will be seeking more outdoor recreational opportunities, including hunting, as time goes by, the answer to that question becomes obvious.

Louisiana is richly blessed with some of the finest hunting and fishing areas in the country. It is highly improbable that fishing opportunity could be decreased as rapidly as hunting opportunity. The state is literally laced with rivers, lakes and bayous. The vast amount of watered areas will provide fishing for some time to come. There are, of course, areas where we must guard against pollution and man-engineered destruction. We will continue to do so to the best of our ability.

One important and growing problem facing the Louisiana Wild Life and Fisheries Commission, as well as similar commissions in other states, is land acquisition for public hunting, fishing and other recreational outdoor sports.

There are three examples which should be cited as courses of action taken by other states. Voters of three states recently approved statewide outdoor recreation bond measures. This action in those states demonstrates a growing public awareness of the need for outdoor recreation investments now while suitable areas are still available and before land costs become prohibitive.

L. D. YOUNG, JR.
Director

The measures in mind are:

Pennsylvania's "Project 70," authorizing sale of $70 million in bonds by 1970 to acquire new regional and local parks and hunting and fishing access areas.

Ohio's combined $250 million schools-outdoor recreation bond issue, of which $25 million is for outdoor recreation land acquisition and improvements over the next three years.

And, a constitutional amendment in Florida authorizing sale of revenue bonds to finance a long-range outdoor recreation land acquisition program.

There are those who say that vast areas of Louisiana are wide open to hunters and fishermen, and persons who are bent on some other form of outdoor recreation. This is true to a certain degree. Louisiana has been generously endowed with such areas. It is also true that our population is growing by leaps and bounds; and it is also true that as the population increases, people have more time for outdoor recreation. Land is being taken on long-term lease for recreational use by persons who have the foresight to recognize what is taking place throughout the country.

When stacked alongside the constant encroachment of industry and civilization, it becomes obvious that hunting and fishing areas are being restricted. In some areas, this is slow. In other parts of the state, this encroachment is taking place at a much faster pace.

It is true that wildlife management specialists are able to improve woods and waters so that the maximum carrying capacity is obtained. This has been demonstrated on our game management areas and in many of our rivers and streams.

It is also true that these specialists must have lands upon which to exercise their important knowledge. This is where land acquisition enters the picture.

Even though Louisiana is a mecca for sportsmen and persons seeking outdoor recreation, we should not trail behind other states now looking to the future. Future plans depend greatly upon land acquisition now and this is something to which we should all give considerable thought. +

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Bird of the Month .... Inside Back Cover

Jack Britt

Canada geese, considered the most stately waterfowl on the North American continent are highly-prized by hunters. The Louisiana Wild Life and Fisheries Commission, in cooperation with the U.S. Fish and Wildlife Service, has begun a live-trapping and transplanting program to bring Canada geese to Louisiana in an effort to build up migratory flocks of these spendid game birds.

WHAT HAS HAPPENED TO THE

CANADA GOOSE

McFadden Duffy

THE LOUISIANA Wild Life and Fisheries Commission, in cooperation with the U. S. Fish and Wildlife Service, is participating in a three-phase program to bring Louisiana's wintering population of Canada geese back in numbers that may possibly make the stately Canada goose plentiful in Louisiana once more and again add it to the species of geese which can be hunted during the waterfowl season.

In order to best illustrate what is being done and what the Louisiana Commission hopes will succeed and make the Canada goose an important game bird again in the state, perhaps it would be best to turn back the calendar to the 1930's when Canada geese were winter residents in Louisiana, offering top sport in goose shooting for waterfowlers in the state.

As the direct result of construction of refuges in Illinois, Missouri and Wisconsin, the entire distribution pattern of Canada geese use on the wintering grounds was changed. One contributing factor to this change was the widespread use of mechanical corn pickers. In the days of hand labor, very little grain was left in the fields of the corn belt. Use of mechanical pickers resulted in spillage of corn amounting to about ten per cent of the crop, thereby laying out a ready made banquet table for geese migrating south from the breeding grounds.

With refuges and an abundant supply of grain Canada geese began to winter further north in the states mentioned. This disinclination to migrate as far south as Louisiana brought about a progressive decrease in the number of Canada geese coming to the State. For the past 15 years, numbers of Canada geese wintering in Louisiana has remained at only 6,000 to 8,000—based on aerial waterfowl inventories by Louisiana Wild Life and Fisheries Commission. Where once the honking of Canadas high in the sky over Louisiana caused the pulses of Louisiana hunters to tingle in anticipation, the sight of Canada geese became rare. Wintering flocks, never numbering more than 8,000 made their home primarily in the marshes, pastures and rice fields of southwest Louisiana.

Waterfowlers, listening to the tales of oldtime hunters, raised the question "What has happened to the Canada geese?"

At this point, it should be stressed that the continental population of Canada geese is in good condition. With relatively minor fluctuations from year to year due to breeding conditions, the overall populations remain healthy and large. It boiled down to the simple premise that Canadas had been short-stopped in what had been a centuries-old migratory pattern. Reasons for the change in migration pattern have already been stated.

This past fall, plans were formulated for joint action by the Louisiana Wild Life and Fisheries Commission and the U. S. Fish and Wildlife Service to attempt to change the contemporary pattern of Canada goose distribution, just as they had been changed by the establishments of refuges in Illinois, Missouri and Wisconsin and agricultural practices that came about as a result of the increased use of mechanical equipment with its resultant grain spillage.

Object of the three-phase program is to rebuild Louisiana's wintering flocks of Canada geese, resulting in Canada goose shooting again in Louisiana in years ahead.

First step in the program was closure of Canada goose shooting in Louisiana and Arkansas to reduce gun pressure on the relatively few thousands of Canadas migrating into the two states during the winter months.

A second phase of the operation was based on the fact that Canada geese were capable of nesting and producing young in Louisiana. This had been proved by importation into the state of a small flock of Canada geese from Wisconsin. Placed in a large fenced marshland enclosure on the Rockefeller Wildlife Refuge, the Canadas from Wisconsin had nested on the refuge and brought off slightly more than 50 young geese.

Allan Ensminger

Canadas from Missouri, live-trapped and transported to Louisiana are shown looking over the enclosed marsh area which will be their new home. These are part of 2,000 Canadas trapped in Missouri and trucked to Louisiana in an effort to build up larger flocks. A 2,000-acre area will be fenced to provide nesting room for these Canadas.

Based upon this preliminary work by the Commission's Refuge Division, a larger scale program was initiated jointly by the state Commission and the U. S. Fish and Wildlife Service.

The project called for live trapping and transplanting of Canada geese from the Swan Lake National Wildlife Refuge in late October and early November. This is a cooperative project by the U. S. Fish and Wildlife Service and the wildlife commissions of Louisiana, Arkansas and Missouri.

Under the plan, it is estimated that it will take three years to evaluate the success of the whole program of re-establishing wintering Canada

Canada geese are shown being removed from the cannon net trap at Swan Lake National Wildlife Refuge in Missouri where 2,000 Canada geese were obtained for shipment to Louisiana's Rockefeller Wildlife Refuge where they will be retained as part of the program to re-establish a flock of this favorite species of goose.

Missouri Conservation Commission

goose flocks in traditional wintering areas of Louisiana and Arkansas.

Quotas set for transplants by the cooperating agencies include 1,500 immature Canadas for the Holla Bend National Wildlife Refuge and the White River National Wildlife Refuge in Arkansas; 750 immature birds for the Lacassine National Wildlife Refuge in Louisiana; 1,600 adult Canadas for the Rockefeller Wildlife Refuge in Louisiana; and 1,000 run-of-the trap Canadas for the Shell-Osage state refuge in Missouri.

In recent years, a progressively smaller portion of the Canada goose population has continued further South than Missouri during fall migration. Dispersal of the huge Swan Lake Refuge wintering flock by trapping and transplanting will, it is hoped, re-establish a wintering tradition for these geese in the southern portions of the Central and Mississippi Flyways.

According to an inventory made October 8, 1963, approximately 70,000 Canadas were on the Swan Lake National Wildlife Refuge. The Canada goose population there has reached a peak in excess of 90,000 birds at times during the past several years. The tally on this single important refuge is but one indication that the continental supply of Canada geese is in good shape.

Populations of this size soon exhaust the food supply on the refuge and under some conditions, cause damage to crops of nearby farmers. Important underlying factor in the overall picture is that traditionally thousands of these geese should be wintering in the southern states, with a great number in Louisiana.

About a dozen men from the federal service and the cooperating states participated in "big lift" goose operation. Louisiana Wild Life and Fisheries Commission personnel in Missouri were Ted Joanan, refuge division biologist, and Howard Dupre, refuge warden. Canada geese were trapped by use of cannon nets.

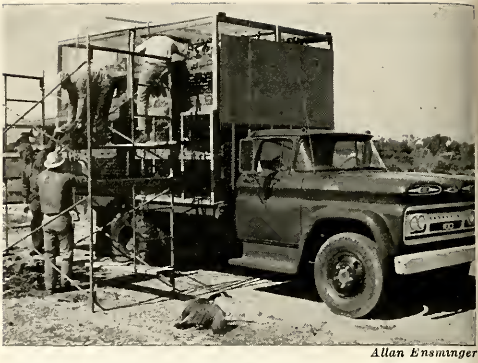
While most of the birds trapped were young-of-the-year on the assumption that young geese without prior experience on a specific wintering area will be more likely to accept and return to the release sites than older birds, the majority of the birds received at Rockefeller Wildlife Refuge were adults.

Louisiana biologists wished adult birds because it is expected that a large percentage are mated pairs. Ordinarily all adults caught in a given live-trapping area number a large portion of mated pairs, ideally suited for the project work now taking place at Rockefeller Wildlife Refuge.

In the trapping operation, Canada geese taken from a fixed area were sent to the same location.

The 2,000 Canada geese sent to Rockefeller refuge were transported from Missouri to Louisiana by Commission-owned trucks. Upon arrival at the vast refuge in southwest Louisiana, the geese were removed from crates and one wing of each goose was clipped so that they could not move off the refuge and its sanctuary.

On Rockefeller refuge, Canadas with clipped wings are being held initially in a 140-acre fenced marsh area. Under construction at present is a 2,000 acre fenced area that will provide adequate area for mated birds to nest. It has been found that nesting geese require an individual nesting territory of considerable size before they will attempt to bring off broods.



Allan Ensminger

Canada geese, live-trapped at Swan Lake National Wildlife Refuge in Missouri, were transported to Louisiana by Louisiana Wild Life and Fisheries Commission personnel using state-owned trucks. Here, they are being unloaded, wing-clipped and prepared for release on the Rockefeller Refuge.

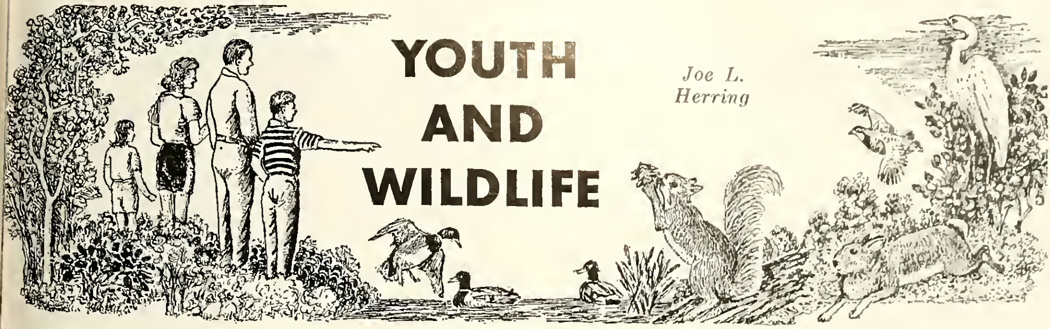
It is hoped that the free-fliers held over winter on the federal refuges will return to these areas during the fall of 1964.

To aid in the identification of transplanted birds after the releases, colored aluminum bands were placed on the captured birds going to Holla Bend White River and Lacassine National Wildlife Refuges. Eventually, band returns from those birds will provide information about migratory patterns of the immature released free-fliers.

In capsule form, the three phases of the overall program were closure of hunting of Canada geese in Arkansas and Louisiana to prevent gunning of voluntary migrant geese while the program is being carried out; live-trapping and transplanting of geese from the Swan Lake refuge; and a large-scale and long range retention of adults and projected nesting program of Canada geese in Louisiana and short term holding of juveniles over winter on certain refuges.

It should be pointed out that Louisiana is traditionally a goose-wintering state and that Louisiana winters approximately 95 per cent of the continental population of blue geese along with good numbers of snow and white-fronted geese. Blue and snow geese, numbering between 350,000 to 400,000 are thriving during the winter months in Louisiana and are the mainstay for goose hunters particularly in the marsh and rice fields areas.

The Canada goose program has attracted the interest of waterfowl management personnel in many areas of the country. While there is no certainty that Canada goose shooting will eventually be returned to its traditional position in the winter migratory and hunting pattern of Louisiana, there is every reason to believe that this positive program can produce favorable results. ✠



YOUTH AND WILDLIFE

Joe L. Herring

Wildlife is one of our most valuable resources and a renewable one. With proper management we will always have deer, squirrels, fish of various species and crusteceans to hunt and fish for. This can be for pleasure, sport or economic purposes, and to let us not forget the aesthetic values of our wildlife.

The Maker of the Universe wanted man to stay alive. To keep man alive he placed in all animals, including man, one impelling drive which he could not resist. The drive was the intense urge for food. This urge is so strong that hunger brings on wars and some people sell their freedom for food.

That same Maker gave man the earth and all its fullness. Fullness in the same sense that He filled it with all the elements which will sustain physical life; enough of everything needed for all men who live on the earth as long as the earth stands. Everything in that earth is protected by a law, which, if never violated and always obeyed, will make possible our everlasting source for sustaining life.

We are beginning to realize now that our strength as a state and nation lies in the richness of our country which has nourished us and fed its abundant vitality into our veins. We are children of a land which has given us our homes and has nourished us in its strong arms. We are beginning to think we shall quit destroying our land and other natural resources.

The understanding of our natural resources is one of the major objectives in a well-planned, functional school program at the elementary, secondary and college levels. Learners should be helped to become conscious of and have a deep concern for our natural resources. They should learn how to use these resources wisely. People should be able to develop immediate and long-time plans for sharing our natural resources so that society as a whole may receive maximum benefits from the states, national and world resources. Such study of natural resources can scarcely be divorced from concern for the conservation of human resources. The wise use of our natural resources is determined by their contribution to the welfare of people. A thing is a resource to the degree that its use meets a human need.

Natural resources are a major concern to each State. Nature did not distribute her natural resources evenly through America. No state, however, has been left without some of the gifts from nature's bountiful hand. Each state has some natural resources which other states do not have. This means that each state must be concerned with using those resources it has. This means also that each state must share its natural resources it has. This means also that each state must share its natural resources, with other states which are without them. Each state must assess and evalute nature's gifts, use them as they are needed and share them with people of other states who in turn are asked to share their resources.

Natural resources in a world of action include people, and products of the land. Intelligent people are the keys not only to a states' strength within its own borders, but among sister states. To the degree that a state develops strong and useful individuals, to that degree it will become strong economically, socially, and spiritually. It will then be able to share its people in accepting national responsibility with other states.

The Education section of the Louisiana Wild life and Fisheries Commission has instructors in each of its eight district offices to tell of Louisiana's abundant wildlife natural resources. Louisiana is blessed with one of the longest and most fertile coastal and marsh areas in the world. Louisiana Gulf coast area is one of the world's largest fish producing areas. This is due to the large river areas flowing into our marsh and Gulf area.

Wildlife is abundant in its many forms from the Arkansas state line to the north to the Gulf of Mexico to the south. Then to Texas on our west and Mississippi to our east.

These instructors give programs in our schools upon the request of the teacher or principal on Louisiana's natural resources. These same instructors give many programs each month to scout, church, civic and other groups.

COMMISSION BOOKLETS AVAILABLE

To further the Wildlife Education of our State the Commission has been publishing booklets on the various phases of wildlife and natural resources of our state.

Five new booklets are available free upon request through the Commission Education Section. Titles of booklets are as follows:

1. **Oak Mast Boon To Wildlife**
2. **Natures Fourflushers**
3. **Snake**
4. **Low Cost London Finish** describes a method of finishing gunstocks.
5. **In The Louisiana Canebrakes**

These publications may be received by writing the Louisiana Wild Life and Fisheries Commission, Capitol Station, Baton Rouge, Louisiana or one of the Commission's District offices. These are located in Minden, Monroe, Alexandria, DeRidder, Opelousas, Ferriday, Baton Rouge, and New Orleans.

LOUISIANA'S HYACINTH CONTROL PROGRAM

John G. Dutton

IT ALL BEGAN at the Cotton Exposition, held in New Orleans in 1884. Not Louisiana's Control Program, but this beautiful, exotic plant made its advent into our State at that time.

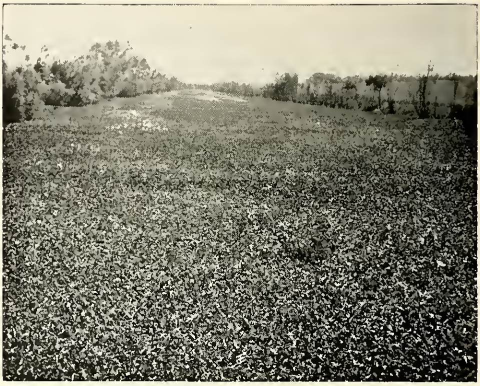
Classified botanically as *Eichornia crassippes,* the water hyacinth was brought from Venezuela on that occasion by the Japanese Consulate and given as souvenirs to many thousands of visitors to the Exposition, to be taken to their homes to grace their patios and gardens. They were probably impressed by the beauty of the bloom and the fact that the plant would require no special attention, but would grow and multiply of its own accord on any body of fresh water until it had completely covered its surface.

The hapless recipients of these floral souvenirs took them to their homes and eagerly put them in bodies of water ranging in size from the stock watering troughs to small bayous and sloughs, and even in larger lakes and streams. It cannot be denied that it is beautiful, but its beauty is greatly overshadowed by the fact that it is a monumental menace, and has been rated by high ranking authorities in the field of Biology as the South's biggest problem in that field. It has been dubbed, "Louisiana's Beautiful Menace."

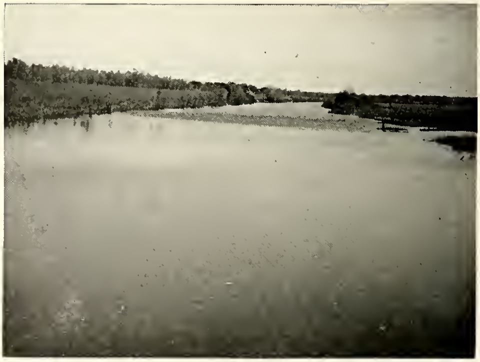
But, Louisiana cannot lay exclusive claim to this questionable distinction, because the water hyacinth has established itself, in varying degrees, throughout the South and as far northward as the Potomac River. We vie with Florida as to which leads in abundance of this plant, and then come Georgia, North and South Carolina, Alabama, Texas and Mississippi. With its uncanny ability to adapt itself and survive in brackish water, and in areas where winter temperatures fall below the freezing point, who can say that it will not spread to the waters of other states and become the menace it has in Louisiana and Florida?

The water hyacinth is not a true hyacinth, but belongs to one of the unexplainable classes of freaks of plant life. It reproduces mainly by germination of seeds which are produced in its bloom. This flourishes in all its beauty for approximately twenty-four hours when it begins to wilt and die. In doing so, it tilts to one side and spills many almost microscopic seeds which sink to the bottom and lie in the mud until the right conditions of temperature and sunlight cause it to germinate and thus begin the cycle of producing another plant. Germination begins with the bursting of the seed covering and putting forth small hair-like roots which attach themselves to the ground. Simultaneously, it produces a stem and leaves, reaching upward. As the stem grows, a section of it forms into an enlarged bulge or bulb which serves as a flotation unit. Within about three weeks, the plant will reach a height of from three to five inches. At this point, the wave action of the water on this flotation unit and the leaves, causes it to extricate its roots from the soil and rise to the surface. These roots continue to multiply, for it is through them that the plant takes food and oxygen from the water in order to live. Runners are put out from the floating plant and reproduction of new plants from these runners begins and continues at a remarkably fast rate.

Germination will take place in waters up to six or eight inches in depth which is almost universally pertinent to our lakes and streams. In most cases their shore-lines begin at zero



View of a barrow pit near Patterson. This pit is fifteen miles in length and three to four hundred feet in width. This situation was typical of most of the streams and lakes in Louisiana before treatment.



View of the barrow pit near Patterson after three treatments by Hyacinth control crews.

A section of Alligator Bayou, in Red River Parish near Cross Roads, after the first treatment by our crews. This mat was impenetrable by boat. The root sections of the hyacinths plants were eight to ten feet in length, making it necessary to pull our steel boats by cable attached to trucks on the bank.

Alligator Bayou after the second treatment with 2, 4-D.

depth, with thousands of acres covered to a depth of about eight inches. This constitutes an ideal physical condition for the water hyacinth to begin its life of trouble for those who use and enjoy our waterways.

The late Dr. Nelson Gowanloch, Chief Biologist with the Louisiana Department of Wild Life and Fisheries, conducted extensive research during the 1940's which served as a basis for starting the present control program. From his research, he concluded: 1) the seeds of the hyacinth are of such durable construction that it has been able to resist all practicable methods contrived by man to destroy it, 2) the seed will lie dormant in the muddy bottom of a body of water for as long as twenty years and then germinate when the right conditions of temperature and sunlight occur, 3) one plant, if afforded ample space, will reproduce to from 65,000 additional plants in a normal spring-summer growing season in mid-Louisiana, and, in the extreme southern part of the State where the growing season is much longer, it is reasonable to assume that this number could well be doubled, 4) the plant, (not the seed), can be killed by spraying it with a one-half of one-percent solution of 2, 4-Dichlorophenoxyacetic Acid, (Amine Salt Formulation), commonly known as 2,4-D.

Prior to 1940, the U. S. Army Corps of Engineers conducted a program of spraying the water hyacinth with a highly toxic solution of an arsenic compound. Although their efforts were confined to the main channel and tributaries of the Intra-Coastal Canal, where the hyacinth mats impeded the movement of powerful tugboats, this program had to be abandoned because of its toxic effect on warm-blooded wild life such as muskrats, rabbits, nutria, and birds to some extent, as well as cattle and other livestock. About the same amount as can be held under the thumb-nail is sufficient to incapacitate a man, and in some cases, cause death. Inhaled droplets of this solution will get into the blood-stream of a man through his lungs and produce the same results. Fish taken from fresh water where this arsenic compound had been sprayed were unfit for human consumption. They superseded this program with one consisting of mechanically cutting or chopping the plants into small pieces in order to gain passage-way for their boats through the tight mats. Here the culprit fought back with its unusual ability to reproduce, which it did from many of the pieces into which the main plant had been chopped. One school of thought came up with the conclusion that this chopping program resulted in greatly spreading this plant during the period of years it was used.

Using the findings of Dr. Gowanloch as a spring-board, first steps were taken by the old Wild Life and Fisheries Department which led to the program presently being used with marked success throughout Louisiana. The first program, inaugurated in 1946, was very crude and costly. Steel barges, sixteen to eighteen feet in length and four feet wide, built of ten-guage steel, supported high-pressure car-washing spray-pumps which were powered by a six-horsepower air-cooled engine. This equipment weighed from 1800 to 2000 pounds and required six men to load and unload it from a truck when it was necessary to move it from one body of water to another. The high pressure produced by this equipment caused a light fog in the spray stream which could be carried by even a gentle breeze to growing farm crops, such as cotton and vegetables, and cause heavy damage. The additional weight of about 500 lbs. of spray solution and at least 300 lbs. for two operators made this a cumbersome and awkward piece of equipment. It did a fairly thorough job, but extremely slow. Further, there was the ever-present danger of killing farm crops, which could not be allowed to continue because of the necessity for making recompense to the crop-owners for these damages.

With the institution of the present Commission form of Wild Life Administration in Louisiana on December 16, 1952, a new look was taken at this program. A sharp eye was aimed at increasing its efficiency so as to reach all the hyacinth infested waters of the State, and removing all possibility of damage to growing farm crops. Desired results were obtained by re-designing the entire boat-spray-unit, substituting a light-weight rotary hypro tractor pump and an equally light 2½ h.p. air-cooled gasoline engine. The entire unit weighs only about seventy-five pounds and can be moved by one man. This was mounted on an open type boat, constructed of 14 gauge steel, with a 100 gallon compartment built in mid-ship to contain the spray solution. This boat had a wedge shaped bow and was propelled by a 5½ and/or a 10 h.p. outboard motor, depending on the tightness of the mat in which we were working. This type of boat has been abandoned because we have cleared out all the known hyacinth mats in the State where it was required. We now use this same type of spray unit, mounted on a wood frame, which is saddled over the middle seat of a V-bottom aluminum boat. This unit produces a nozzle pressure not exceeding 60 pounds per square inch and does not cause fogging of the sprayed mixture, thus eliminating the danger of killing cotton and other farm crops. There is sufficient pressure to throw a stream a distance of fifty feet, with the outer ten-feet fanning out for excellent coverage. The spray solution is mixed in a fifty-five gallon drum, carried in the boat. A crew of two men on each boat can treat fifteen to twenty acres in a normal work day.

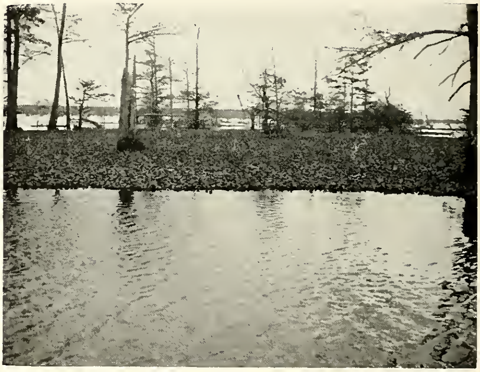
A considerable increase in killing power of the spray solution has been obtained by the addition of about three ounces of a non-sudzing detergent to each fifty gallons of water, to which has been added one-quart of 2,4-D. This reduces the surface tension of the mixture and thusly prevents the formation of droplets which would readily roll off the waxy surface of the hyacinth plant. Another surfactant known as "spreader-sticker" is added to the mixture for this purpose when treating the White Water Lilly or Lotus and other undesirable aquatic weeds which we have added to our list of victims.

A heavier type of spray unit has been fabricated in this Section which pulls water from the stream, mixes it with 2,4-D and sprays it simultaneously. Being somewhat heavier, a larger aluminum boat is required to transport this unit. However, it has been found to be of great value by eliminating the need for a mixing compartment, and, it will throw the stream much farther. It is used very advantageously in large swamp areas such as the Atchafalaya Spillway and the Spring Bayou system of lakes and streams in Avoyelles Parish, where fog drifting from its spray-stream cannot reach growing farm crops.

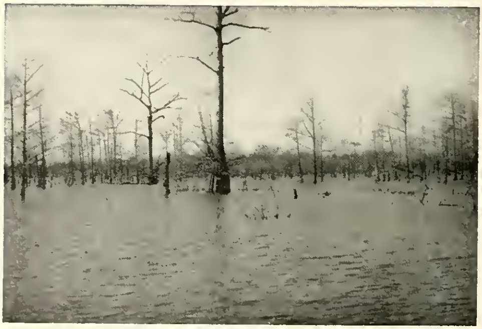
Contrary to popular belief, this program is not seasonal, but is in full operation throughout the year. In fact, a quicker and more thorough killing effect is obtained during the colder months from October to March. During these months, frost has wilted, not killed, the upper leaves of the plant thus exposing its rhyzome, to a more direct action by the 2,4-D.

It is not claimed that this program has, or will completely eliminate the water hyacinth from the waters of our State, but it definitely has brought about complete control. Our efforts for the past three or four years have been directed at maintaining this high degree of control. Because of the germination of dormant seeds each spring which have been lying in wait for suitable conditions of temperature and sunlight, we feel that this maintenance work will continue ad infinitum. In order to prevent a greater accumulation of such seeds, we triple our efforts in the Spring in an attempt to spray and kill as many plants as possible before they bloom and produce more seed.

Spurred on by conclusions from Dr. Gowanloch's research, the Department of Wild Life and Fisheries recognized the feasibility of a Hyacinth Control program and obtained an appropriation of $100,000 to begin such a program in 1946. From that date through 1958 appropriations ranged from $25,000 to $250,000 per annum with a special appropriation in 1954 of $50,000 for research on the control of other noxious aquatic plants. Beginning in 1959, Louisiana combined efforts with the U. S. Corps of Engineers in the establishment of an aquatic vegetation control program. Since that time the two agencies have worked together closely in financing and carrying out this work. ✠



A heavy mat of water hyacinths on Wallace Lake before treatment.



Same section of Wallace Lake after three treatments by the Hyacinth control crews.

LAKE MANAGEMENT BY WATER FLUCTUATION

Kenneth E. Lantz

READERS of Durward L. Allen's "Drawdown for Better Fishing" article in a national outdoor publication may be surprised to hear such a program is being conducted annually on one of Louisiana's public lakes. Yes, and the results are more dramatic than described in Mr. Allen's Cache Lake.

Statements like the following are coming from Leesville area fishermen:

> "The water fluctuation program on Lower Anacoco Lake gives us a new lake year round, 1300 acres when it is drawn down and 2600 acres when it is at spillway level. My partner and I brought out 30 bass and 25 white perch in three hours of fishing this morning." (Lewis Brown, October 10, 1963).

Lower Anacoco Lake is an impoundment of 2,600 acres located six miles west of Leesville in Vernon Parish. Following construction of the Lake in 1951, aquatic vegetation began to appear in the shallow upper reaches. Spread of the vegetation was gradual during the first five or six years following impoundment of Anacoco Bayou, but only in the late 1950's did fishermen begin to complain about access in the northern portion of the Lake. In May, 1960 the Anacoco Prairie State Game and Fish Commission (the local governing body of Lower Anacoco Lake) requested that the Louisiana Wild Life and Fisheries Commission conduct a survey of the aquatic vegetation conditions in the Lake and prepare a management program to aid in reduction of the obnoxious plants.

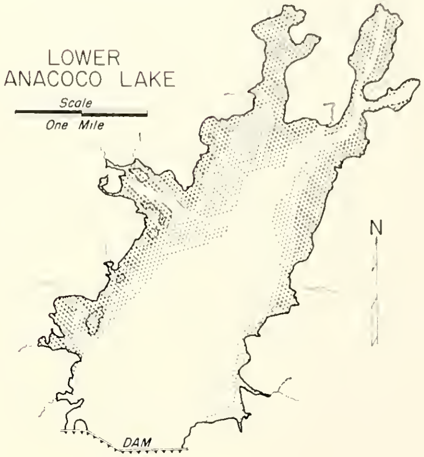
Following the July, 1960 survey of Lower Anacoco Lake, the following recommendations were submitted to the Lake Commission:

Fluctuation

Lower Anacoco Lake should be fluctuated annually. The control gates should be opened during the first week of July following the 4th of July holiday, and the water should be lowered six feet at a rate of four inches per twenty-four hours. This date will allow maximum utilization of the lake by water skiers, fishermen, and picnickers on this holiday prior to water drawdown. By removing the water slowly, fish will have time to move out of the shallow areas and avoid the possibility of being trapped. By maintaining a six feet drawdown through mid-October, the summer growth of the aquatic vegetation will be cut off almost completely. The gates should be closed in mid-October to allow refilling of the lake during the fall and winter months.

Fishing Restrictions

During the period of drawdown, fishing should be allowed even though the lake volume will be reduced from 23,000 acre-feet to 11,000 acre-feet. While large numbers of fish will be harvested during this period, there will be little danger of drastically depleting the fish population. Concentration of the fish in a smaller area will not only produce more fish per fishing effort, but will also create overall fish population balance. Predaceous fish can easily reduce the number of forage fish and, thereby, exert a favorable population control. The lake should also be left open to commercial fishing by any licensed fisherman using legal gear. Their operation will remove commercial fish that compete with game fish for space and food. No creel limits or restrictions should be imposed other than those regulations and limits prescribed by the Louisiana Wild Life and Fisheries Commission.



░ Extent of vegetation appearing at the surface on July 1, 1962 prior to water drawdown that month.

▨ Extent of vegetation appearing at the surface on July 1, 1963 prior to water drawdown that month.

Fish Population Studies

Fish population samples and vegetation samples should be taken by the Louisiana Wild Life and Fisheries Commission prior to and following initiation of the drawdown program to detect changes in the fish population and vegetation conditions.

Adoption of the drawdown program was debated by several members of the Lake Commission on the grounds there would be considerable hardship on boatmen in operating their motors during the summer drawdown period. Travel would be almost entirely restricted to the old Anacoco Bayou stream bed transversing the length of the lake. Other members stated vegetation was so bad during the summer months that travel had gradually become restricted to this old stream bed. Following several months of considerations of both viewpoints, the Lake Commission decided to approve a one year trial drawdown program beginning in July, 1961.

Drawdown was begun in late July, but unusual heavy rainfall during the summer of 1961 did not permit a continued six feet water drawdown. A series of rains associated with hurricane conditions during that summer caused a refilling of the lake on one occasion even though the control gates were open. Although there was only a month of continued six feet drawdown during that year, definite changes were detected in both fishing and vegetation conditions in late 1961 and early 1962.

The Pay Off

Fishermen began to bring in numerous limits of crappie and largemouth bass prior to winter refilling of the lake. Fishing during the spring of 1962 was as good as was experienced during the first three or four years following creation of the lake. Fish population samples taken by the Louisiana Wild Life and Fisheries Commission in June, 1962 and compared to June, 1961 samples indicate a definite favorable change occurred in association with the 1961 drawdown. The percentage of the total fish population made up of game fish increased from 57% in 1961 to 73% in 1962, including a largemouth bass population increase from 7% of the total population in 1961 to 11% of the total population in 1962. The available or harvestable game fish increased from 23% in 1961 to 36% in 1962. This game fish increase was accompanied by a decrease in the gizzard shad (a forage fish) from 39% of the total population in 1961 to 23% of the total fish population in 1962. These statistics indicate there was an increase in the percentage of game fish and reduction in the percentage of non-game fish comprising fish population of the lake following the 1961 drawdown, as is indirectly shown by the numerous limits of game fish caught during the winter of 1961 and spring of 1962.

Changes in vegetation conditions following the 1961 drawdown was less dramatic than the above mentioned fisheries data. Appearance of the submerged vegetation at the water surface was delayed approximately two weeks during the spring of 1962. This delay in vegetative growth indicates that even though the drawdown was not maintained as desired, the summer growth was reduced somewhat.

On July 16, 1962 the Anacoco-Prairie State Game and Fish Commission adopted a resolution that control of Lower Anacoco Lake be turned over to the Louisiana Wild Life and Fisheries Commission for a period of five years for the purpose of retarding vegetation production and managing the fish populations through water fluctuation. The basis for this resolution was results rendered by the limited drawdown of 1961.

The 1962 drawdown was initiated by the Louisiana Wild Life and Fisheries Commission and Louisiana Department of Public Works following adoption of the Lake Commission resolution. Extreme drought conditions during the summer and fall of that year resulted in an extended six feet drawdown as desired in the management program described earlier. Good fishing reports continued to come from the lake during the 1962 drawdown, but slowed down during the winter as rising waters gradually filled the lake.

During the spring of 1963 fishing again picked up, continuing to the time for the July drawdown. One noticeable difference in the effects of drawdown during the spring of 1963 and the spring of 1962 was the reduced amount of submerged vegetation reaching the water surface prior to

Fishermen began to bring in numerous limits of crappie and largemouth bass prior to the refilling of the Anacoco lake in the winter of 1962.

This catch of bass taken in March, 1963 by Fort Polk Army Officer, typifies the many fine fish taken from Lower Anacoco Lake since fluctuation began.

July. Reference to the map shown on page 9 will reveal the extent of vegetation appearing at the water surface on July 1, 1962 and July 1, 1963. Approximately 40% of the lake showed this condition in 1962, while only 20% of the lake exhibited this condition in 1963. This was a 50% increase in access in the northern part of the lake during the spring months.

The 1963 drawdown was begun July 8, and drought conditions of this year indicate a fluctuation comparable to 1962 will occur this year. The Louisiana Wild Life and Fisheries Commission will continue this fluctuation program on Lower Anacoco Lake through the next four years while the lake is under its supervision.

Conclusion

In conclusion, several points should be brought out concerning the future use of water drawdown in managing Louisiana public lakes:

1. Water fluctuation for the purpose of controlling aquatic vegetation and managing fish populations is a relatively new field in the management of impoundments. There are many unanswered questions concerning harmful as well as beneficial effects of water drawdown in varying lake types.

2. Full control of a public lake should be given a group of trained technicians for a minimum of five years if a drawdown program is to be initiated. Sometimes the benefit from fluctuation is not immediately obvious, resulting in criticism from opposers of the program. Three years of drawdown may be required to create a change in one lake, while an adjacent impoundment may have varying vegetation conditions and require only one year of fluctuation for changes to occur.

3. Adjustments must be made by fishermen using a lake during the period of drawdown. One of the major hardships encountered is access from camps to the lowered water. Most of the camp owners at Lower Anacoco Lake have met this problem by creating small channels from these camps to the deeper water.

1963-64 HUNTING SEASONS

Louisiana will have the following hunting seasons and bag limits during the 1963-64 seasons:

QUAIL:
November 28—February 23, Daily Bag 10, Possession 20
RABBIT:
October 5—February 15, Daily Bag 8, Possession 16
SQUIRREL:
October 5—January 10, Daily Bag 8, Possession 16
TURKEY:
April 4—19, Daily Bag 1, Gobblers Only
DOVES:
September 2—16, October 12—November 3, December 7—January 7. Three way split 70 half days, bag 10, Possession 20, shooting hours 12 noon till sunset.
WOODCOCK:
November 27—January 15, bag 5, Possession 10, shooting hours—sunrise till sunset
SNIPE:
November 30—January 13; bag and possession 8, shooting hours—sunrise till sunset

1963-64 DEER HUNTING SCHEDULE

WITH OR WITHOUT DOGS: November 29—January 10.

A. Bag: One legal deer per day: 2 legal deer per season.

B. Legal buck is defined as a deer with antlers not less than three inches in length. The killing of bucks with antlers less than three inches and doe deer is prohibited except where specifically permitted.

C. Deer hunting restricted to legal bucks only, except where otherwise specifically permitted.

D. Either sex deer is defined as any male or female deer, except spotted fawn which are protected, taken in any area designated and regulated as such.

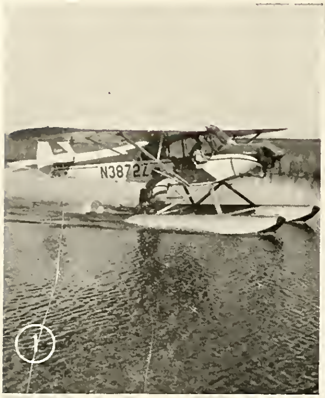
E. Still Hunting Only prohibits the use of dogs for hunting deer or the training of dogs in areas so designated, including Game Management or Refuge areas. In all other areas, deer hunting will be permitted with or without use of dogs.

F. All areas not specifically designated as being open are hereby closed.

4. Several public lakes in Louisiana justify consideration for experimental drawdowns. Initiation of water fluctuation programs in these lakes can become a reality only through the combined efforts of the general public and personnel of the Louisiana Wild Life and Fisheries Commission. +

LOUISIANA'S GULF MARINE

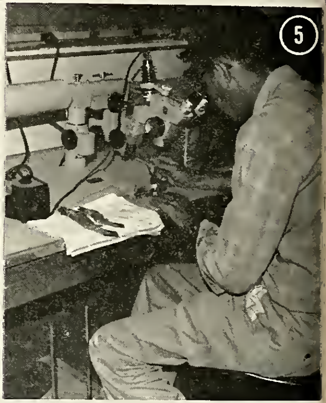
(Photo feature by



RESEARCH

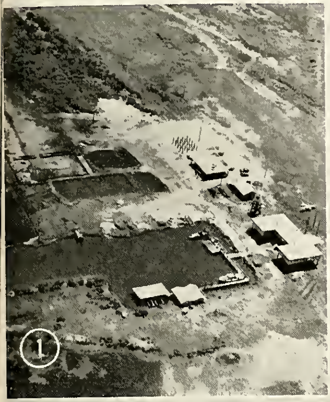
Shrimp and oyster research in the vast coastal area of Louisiana requires that qualified and well trained personnel use various types of equipment and instruments which range from airplanes to microscopes and from large boats and nets to the more sensitive electronic measuring devices. Basically the work is planned to determine the factors controlling and affecting the important marine life in its natural environment. In this way population densities and changes may be forecast or detected in time to allow for proper management of the resource.

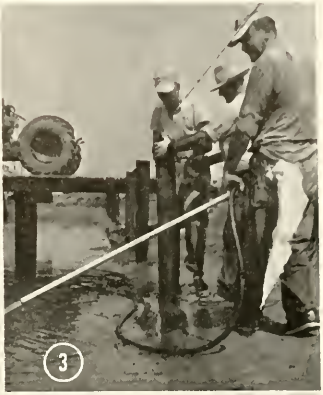
1. New system of postlarval sampling with the use of an airplane.
2. Beam type plankton net routinely used for post larval sampling.
3. Postlarval shrimp taken in plankton samples are sorted and preserved.
4. Juvenile shrimp samples are taken with small mesh trawl, as metering device records salinity and temperature.
5. Mature shrimp are examined for degree of sexual maturity.
6. Shrimp from trawl samples are checked for species, size and sex.
7. Shrimp held in holding tanks beneath laboratory, except during extremely cold weather, are routinely checked for gravid condition.
8. Shrimp are weighed at the termination of pond culture experiment as the pond is being drained.



LABORATORY AT GRAND TERRE

Jack Britt & Ted Ford)





CONSTRUCTION

Living and working in the Louisiana coastal area is a problem in itself. Adequate research facilities are a necessity and comfortable housing mandatory if personnel are to be able to accomplish their task efficiently. Shown here are some recent improvements in buildings and related laboratory facilities which will add to the laboratory space and furnish outdoor experimental areas.

With these improvements, the Louisiana Wild Life and Fisheries Marine Laboratory at Grand Terre Island, though only three years old, is rapidly becoming one of the better marine stations in the Gulf area.

1. Grand Terre Marine Laboratory showing new construction and facilities.
2. Construction of dormitory to provide adequate housing for personnel at the Grand Terre Marine Laboratory.
3. Laboratory personnel construct bulkhead to control bank erosion.
4. Deep water pond for over-wintering brood shrimp in foreground, and ¼ acre shrimp culture ponds under construction in background.
5. Sample of damaged oysters are removed from lease for further study.
6. Oysters are held at laboratory for experimental purposes.
7. Preparation of media for the determination of infestation by the parasitic fungus *Darmacystidium marinum.*
8. Sediment samples from silted areas are sized and graded with a sieve and then analyzed.

THE REDFISH

ONE OF THE GREAT marine game fishes of the world, the redfish finds the shallows along Louisiana's irregular coastline much to his liking. Anglers, in turn, find the channel bass equally attractive.

The redfish, like many species, varies in color from place to place and time to time, but the range is generally from a copper-red all over to grayish-silver with reddish tones on the back.

Another description of the color says, "The dorsal surface is olive green or bluish green

(photo by Steve Harmon)

The Louisiana record redfish weighed 45 pounds 12 ounces, but the normal "bull red" will run from ten to thirty pounds in our waters. The black spot near the base of the tail is an almost infallible identifying characteristic.

(photo by Paul Kalman)

The snub-nosed, tough-fighting, coppery-colored channel bass, known as the redfish in Louisiana, is one of the favorite fish along our coast.

tinged with bronze. The coppery reddish pink or pearlescent reddish pink sides gradually go lighter to a white belly. Dorsal and caudal fins are dusky; anal and ventrals white; pectorals usually bright rusty on outer side".

An identifying mark that is almost infallible, however, is a round or oval black spot on the tail. It's present, almost without exception, on the top posterior portion of the caudal peduncle. Not infrequently a fish will have more than one spot.

This spot gives the red one of its many common names—Spottail. Other local names are Red Drum, Reef Bass, Red Horse, Red Bass, Drum, Beardless Drum and, of course, Redfish.

The channel bass is a snub-nosed fish having large scales. The first dorsal fin usually numbers ten spines, with about 25 rays in the second dorsal, and seven or eight rays in the anal fin.

Along the Louisiana coast redfish are known as "rat reds" when they weigh up to about five pounds. Beyond that they become known as "bull reds", and twenty to thirty pound fish are not unusual.

The Louisiana record is 45 pounds and 12 ounces, but fish taken along the Atlantic coast run considerably larger. The world record for rod and reel was taken off Cape Charles, Virginia in 1949, and weighed 83 pounds. Several reds going over a hundred pounds have been taken in commercial nets.

Life Habits

Like the speckled trout, channel bass are fish of the shallow coastal waters. Not a great deal of scientific work has been done on this species, but it appears that they move inshore in warm weather and into deeper waters offshore when cold weather arrives.

Fall and winter are the seasons when the reds move into and around the mouths of passes along the Gulf to spawn, and this is a favorite time for redfish anglers.

The favorite food of the redfish is the shrimp, with crabs and small fish also taken readily.

One authority gives the approximate growth rate of the channel bass, listing the length of the fish according to age: one year—12 inches; two years—20 inches; three years—24 inches; four years—28 inches; and 5 years—32 inches.

They do not appear to breed until their fourth or fifth year.

Redfish are school fish, especially after reaching a length of about 27 inches.

Distribution

Channel bass are found from New York down the Atlantic Coast, and around the Gulf to Texas, but it is fairly rare north of Virginia.

In Louisiana the redfish is found throughout our shallow marine waters.

Habitat

The warm, coastal shallows are the favorite habitat of the redfish, just as it is for the speckled trout. They like the sandy beaches along the offshore islands, and congregate around the mouths of bayous and cuts, particularly during the fall spawning time. Channels between bars are favorite spots.

Economic Value

The redfish is an extremely important sport fish for Louisiana anglers, deserving of extensive effort to perpetuate and improve its status.

Along with the speckled trout, the red provides a pair of superb fish which make surf fishing in this state the equal of that found anywhere. Redfish are also fished for from boats in the bays, bayous and cuts all along the Louisiana coast.

In Louisiana the redfish is comparable to the speckled trout as a commercial fish, with an average of about a half a million pounds of each species taken annually. It is an excellent food fish.

The take by sport fishermen is unknown, but undoubtedly runs into the hundreds of thousands of pounds.

Management

As with most other marine fish species, management of the channel bass fishery in Louisiana has been limited largely to the fixing and enforcing of fishing regulations. The minimum size limit for commercial fishermen is 16 inches.

Commercial fishermen must have licenses for their nets. Sport fishermen who use rod and reel or artificial bait must have a fishing license.

Little research has been done on the redfish in Louisiana, but the marine Laboratory on Grand Terre Island, built and operated by the Wild Life and Fisheries Commission, is now gathering information about our coastal waters which will be of value in managing all of our marine resources. ✠

(photo by Paul Kalman)

Redfish are school fish, especially in the larger sizes, which means that when one surf fisherman connects most nearby fishermen also get strikes.

Letters... Questions... Answers... about WILDLIFE *in* LOUISIANA

conducted by Steve Harmon

Dear Editor: Morse

I hope that you can give me the right answers to the following questions.

1. Do you need a license to fish with a rod and reel in a private farm fish pond?

2. Is it legal to catch small fish by any method known, if the fish will be used for the sole purpose of stocking the farm fish pond?

3. When I built my farm fish pond, I was told that I did not have to follow the State fishing laws, when I fished in my own fish pond. Did I get the right information.

TOM W. CRAWFORD, JR.

You must have a license to fish by rod and reel for any game fish found in the fresh waters of the state. The law applies to private ponds. The ownership of all fish or the parts thereof or their products, existing in the waters of the state is in the state in its sovereign capacity.

The method of taking fresh or salt water game fish is found on Page 71 of Louisiana Fish and Game Laws booklet. I am enclosing a copy of these laws.

You definitely received the wrong information when you were told you did not have to observe the Louisiana law.

Hope the above and copy of Game and Fish laws will help clarify your position.

Dear Editor: Denver, Colorado

First, I want to tell you how much I enjoy your "Bird of the Month" in the CONSERVATIONIST. When I moved to New York state I became quite a "dickie-birder", and now I am interested in all birds.

My question is, do you have a copy or reprint on all the birds you have published on? Although I have been receiving the "LOUISIANA CONSERVATIONIST" for nearly 10 years, I had to get rid of a good many of the publications I take. I have accumulated too much to pack around the country, so I donated my "LOUISIANA CONSERVATIONISTS" and a couple of others to the Mann Library at Cornell University when I moved to Denver last spring. I am building up my file on all birds and since your articles are so good I would like to get copies of all of them if they are available.

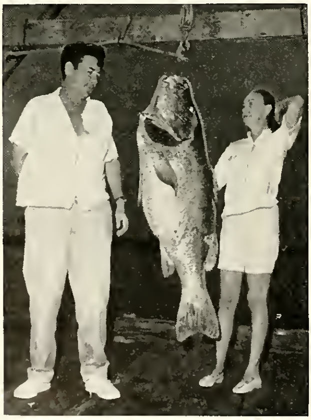
I still miss Louisiana and all the fine marshes to work in.

OLAN W. DILLON, JR.

We hope someday to publish a booklet on Charlie Shaw's "Bird of the Month" series.

Dear Editor: Shreveport

Here is a photograph of the largest snapper known to have been caught in Louisiana coastal waters. Weighing 74 pounds, it was caught by the writer about 20 miles out of South Pass during the October tournament sponsored by the New Orleans Big Game Fishing Club.



Perhaps your readers would like to see a big one that didn't get away.

JAMES MERIWETHER

Dear Editor: Covington

I have several questions about the hunting laws and regulations of Louisiana. I would appreciate it very much if you take time and answer them for me.

I would like to know in full detail the laws concerning hunting on private property belonging to yourself or property you own and letting someone else hunt on it even if it is posted.

I would like to know the rights of a hunter hunting on fenced property that is not posted and the rights of the owners of the property; the rights of a hunter hunting on unfenced property.

I have read quite a few conservation books that the state mails to different people. If it is at all possible I would like to receive this booklet or magazine. If you don't send this out kindly give me the address so I may write and get it.

WALDO McCOURTNEY

You must obey all of the state laws regarding hunting, including open and closed seasons, bag limits, etc. whether or not you are hunting on your own private property or not. When hunting on private property permission should be secured in order to maintain good hunter-landowner relationships.

The Louisiana Wild Life and Fisheries Commission has nothing whatever to do with posting property and for information concerning the violation of such property rights you should contact your local parish officials such as Sheriff and/or District Attorney. If violations involved one of our game management areas, then *of course we would be in a position to bring charges against the person or persons concerned.*

I am enclosing a copy of the pamphlet on Louisiana hunting, fishing and trapping regulations for 1963-64.

We are placing your name on the LOUISIANA CONSERVATIONIST mailing list.

CHARLES SHAW

Dear Editor: Lake Charles

Enclosed is a photo you may want to use in your magazine. 75 White Perch and one cat fish. Caught in October, 1963 in Lacassine Bayou by Loree Cormier and Albert Abrahams, Lake Charles, Louisiana.

LOREE CORMIER

Dear Editor: Monroe

We wish to thank you and the Wild Life and Fisheries Commission for sending Mr. Dick Wall to speak to our Eighth Grade class.

His talk was interesting and informative. I believe because of his talk our children will be better conservationists and most of all better and more appreciative citizens of Louisiana.

GEORGE M. RISER, Principal

Dear Editor: New Orleans

Thank you for your prompt response in sending me LOUISIANA CONSERVATIONIST. I trust that from now on I will be on your mailing list.

May I compliment you on a very enjoyable publication.

WILLIAM F. BRANDOM, Ph.D.

Dear Editor: St. Joseph

I enjoy reading your magazine very much. I am sure many others do also.

I think your "LOUISIANA CONSERVATIONIST" is the most informative publication I have ever read.

The up-to-date hunting and fishing information sure comes in handy, as I am active in both these fields.

I have introduced this publication to some of my friends and relatives. They also think it is sensational.

JOHN GARRETT

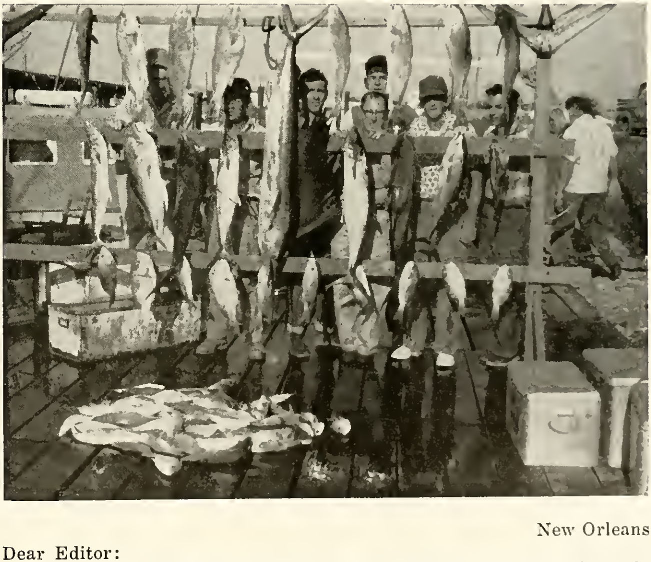
Dear Editor: Washington

Many, many thanks to you and your staff for sending the LOUISIANA CONSERVATIONIST to me. I received my first CONSERVATIONIST today.

RONNIE SANDERS

P.S. Keep up the good work.

Wildlife Instructor presenting a program on the wildlife resources of Louisiana's Florida parishes. The Wildlife Instructor informs the students of Louisiana wildlife wealth on a parish and state basis, then compares Louisiana to other States in our Great Nation. These instructors tell of the aesthetic, recreational and economic values of our wildlife.



New Orleans

Dear Editor:

I thought you would like to see a fine catch that was made in early November out of Empire. The sailfish measured seven feet and I caught it on spinning tackle. Other fish in the total catch included redfish, cobia, big white trout, king mackerel, bonito, jackfish, grouper and red snapper.

Non-resident anglers would find it hard to believe that the party I headed made this excellent catch less than 20 miles from Empire.

I have been told that my sailfish was the first to be landed on spinning tackle in Empire waters. I do not know if this is certain but can assure you that it was a great fishing thrill.

LOUIS SHADWELL

CLEAN WATERS and GOOD FISHING

. . . go hand in hand!

BOB LAFLEUR and GRITS GRESHAM

Grits Gresham

Most of Louisiana's small streams are relatively free of pollution. This is Bayou de L'Outre near Farmerville.

FROM THE ADVENT of recorded history the earliest settlements have almost always been along waterways. One of the reasons, of course, is that those waterways provided a method of transportation back in those road-less days.

Another reason, however, is that those same waterways served as a ready-made disposal system for the wastes of civilization.

They still do, but the costs of using them in this fashion grow greater and greater as the years go by. The cost of polluting our waters, in fact, has become intolerably high in some parts of the nation, and will logically become more so in the future.

Our use of fresh water in the United States has soared from 50 to 240 *billions* of gallons per day in the past half century, and the end of the increase is nowhere in sight.

Some of this "use" is consumptive, in that the water is gone when it is used. Some, however, is used and then returned to the streams, most often in poorer condition, and is not "used up" in the sense of having disappeared.

Most fortunate for us all, the water returned to the streams can be used again. It has been said, in fact, that most of the water of the Mississippi River is being used 10 to 12 times between the headwaters and the mouth.

Of the non-consumptive uses of water the one with which we are most concerned is recreation —boating, water skiing, swimming, and fishing. The beautiful part of these activities is that they utilize water but do *not* consume it.

Neither do they render it unfit for other uses downstream.

This is not true of all other uses of water, so let's examine some of them which often lower the quality and purity of the stream.

Liquid wastes from every conceivable manufacturing process are being disposed of via our waterways in alarming and increasing amounts. The United States is in the forefront of an industrial race that appears to be without end, so the problem of disposing of such wastes must inevitably grow greater.

Louisiana, of course, has shared in this industrial expansion to a great degree, evidenced by the fact that industry investment in the State in 1956 average 1¼ million dollars a day.

Much of this industry was and is being lured to Louisiana by the abundance of our water resources. The daily flow through the state in our six major river basins is from 100,000 to 450,000 *million* gallons daily, which represents a bonanza for industry in the form of process water for

Jack Britt

Gravel mining operations have long been a source of pollution through increasing the turbidity of streams, and require the constant vigilance of the Water Pollution Control Division.

manufacturing as well as for disposing of effluents.

The industries now in Louisiana will expand and others will grow more numerous and more important to the economy. Pulp and paper mills have been expanded and new ones built in the past decade, and this process is sure to be repeated in a move to take advantage of Louisiana's vast forest resources.

Such changes in the face of the landscape are great for the economy, but they pose problems in pollution control.

You and I contribute each day to the pollution load of our streams, through domestic wastes. Most of the cities and towns of the state get rid of raw sewage by dumping it in the nearest waterway, without any treatment at all.

And then there are the detergents, a boon to housewives but—again—a ban to pollution abatement officials. Four billion pounds of detergents were sold in the United States last year, and the total is rising about five percent annually.

The problem with detergents is that they go right through a city's water lines, even through treatment plants, and still seriously affect fish life in the receiving streams.

Pesticides are being used in ever-increasing amounts in Louisiana as well as throughout the nation. They usually do a good job of getting rid of pests—plant and animal, in making life more pleasant and agricultural operations more productive.

When sprayed or washed into lakes and streams, however, they are often lethal to the aquatic inhabitants.

Other forms of pollution which can lessen or end the value of water for other uses include that from oil field production, from sugar factories, and from gravel mining.

The agency charged with guarding the purity of Louisiana waters is the Louisiana Stream Control Commission. The enforcement arm of the Commission, however, is the Water Pollution Control Division of the Louisiana Wild Life and Fisheries Commission.

The Director of the Wild Life and Fisheries Commission is chairman of the Stream Control Commission, and the Chief of the Water Pollution Control Division is Executive Secretary of the Stream Control Commission.

This close connection between pollution abatement and control and the state wildlife department is fortunate, desirable, and logical.

Recreational fishing is tremendously important to a large portion of Louisiana's population, it being estimated that as many as one million

Jack Britt

The techniques of waste treatment and control have not kept pace with the technology of manufacturing, although industry is spending great sums on pollution control facilities.

residents enjoy the sport each year. Maintenance of adequate fishing opportunity for these anglers depends, in a large measure, upon the maintenance of our waters in condition to support fish life.

Pollution abatement-control, in short, goes hand in hand with good fishing, so let's examine just how Louisiana is faring in this respect.

The biggest statewide problem is the discharge of oil field brines into lakes and streams. In most oil field production salt water is produced in quantity along with the oil, with the percentage of brine soaring in the poorer fields and increasing as the field ages.

Most of this brine goes into the nearest stream. It is seldom that such brine discharge results in fish kills, but the detrimental effect of salt water to a fresh water fishery is there nonetheless. When a fresh water stream or lake becomes saline the capacity of it to sustain fish is reduced —and sometimes ended.

The Commissions concerned with pollution control have waged a constant fight to correct this situation, and considerable improvement has resulted. Reinjection of the salt water into the ground is the most satisfactory method of disposing of it, and more oil producers are adopting it as time passes.

Reinjection, of course, costs money, and operators of marginal wells maintain that the additional cost would put them out of business.

The magnitude of the brine pollution is seen in just two figures. In the Lower Atchafalaya Basin a total of 2,816,870 barrels of brine is discharged into the streams each month. The daily discharge into Catahoula Lake from the Tullos-Urania field is 200,000 barrels.

In both of the above cases only the enormous quantity of fresh water which passes through them each year makes such pollution even tolerable.

Oil spillage is another form of pollution from oil wells which is detrimental to the fishery, which is a great nuisance and source of irritation to fishermen, and which is an eyesore that lowers the aesthetic beauty of lake or stream.

In addition to the vigil of the Stream Control Commission and Wild Life and Fisheries Commission, the Conservation Commission has inspection and enforcement teams in the field checking on mineral operations. When they find evidence of stream pollution a copy of their report on the incident goes to the Stream Control Commission.

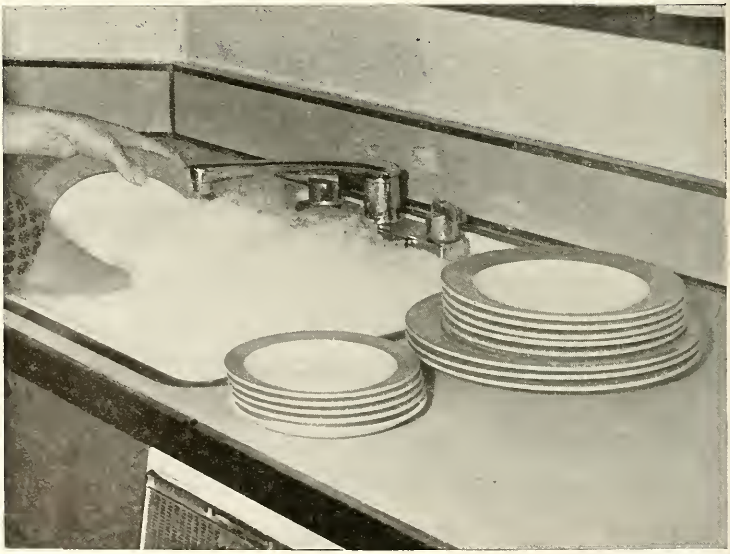
Brines from south Arkansas oil fields had been a source of pollution for north Louisiana streams and lakes for years, but this condition has improved tremendously in the past four years and will continue to do so. The change resulted from the first interstate enforcement action ever taken by the U. S. Public Health Service in stream pollution.

As evidence of the vast improvement in this case, the Olin paper mill at Monroe will begin using Ouachita River water in its processes once the mill expansion now under way is complete. Water for paper manufacture must be almost as good quality as that needed for domestic use.

Pulp and paper mills have been severe sources of stream pollution in the past in Louisiana, and some still are. The Monroe mill represents the most important industrial pollution problem in that area, but improvement should be coming up soon since the case has been taken under advisement by the Stream Control Commission.

The paper mill at Bogalusa has been and is a severe source of pollution of the Pearl River, an excellent fishing stream, but that industry is now committed to waste treatment. None existed

Billowing suds are fine in a sink, but pollution through detergents is an increasing problem.



Edouard Morgan

there previously, so improvement in stream condition can be expected.

This Pearl River pollution problem was recently the subject of a conference called by the U.S. Public Health Service to gather information on this interstate stream. The conference is the first procedural step which could lead to enforcement action by the Federal Government to end the pollution.

Most pulp and paper mills in Louisiana have constructed facilities to lessen or end the detrimental effects of their waste effluents. International Paper Company built Wham Brake to completely impound all wastes from the Bastrop mill, one of the largest in the state.

Wham Brake, as lagniappe, is a fine duck shooting area, so the 7½ square mile basin is a public relations boon to the company as well as an efficient method of handling wastes.

Although not built directly for pollution control, it's appropriate to mention that the water storage reservoirs built by paper companies often provide excellent fishing for the public. IP's Bussey Brake, above Bastrop, and Lake Erling, above Springhill, are two examples. Their impounding basins at the Springhill mill, built directly for pollution control, also provide fine fishing.

Sugar factories have been, in the past, a source of severe fish kills in south Louisiana. This is one area of abatement effort where great improvement has been made. Many factories have built facilities which, in addition to reducing or ending pollution of streams, have actually resulted in more sugar being produced instead of being lost into the streams.

Sugar factory pollution this past fall was moderate to severe, a result of extremely low water conditions and a bumper cane harvest.

The dry weather which brought on the low water conditions, on the other hand, resulted in fewer fish kills from pesticides this past year. Most such kills result when a rain closely follows a spraying or dusting operation, washing the poison into the streams.

The pesticide pollution problem is a severe one which most probably will get worse before it gets better. Federal and state research is under way aimed at these problems, but this is long-ranged effort. Now, day by day and year by year, people in all walks of life are demanding new and more lethal control agents as pests become immune or resistant to the old ones.

More control and restriction on the use of pesticides, through federal and state legislation, is a probability in the near future.

Gravel mining, particularly along the streams of the Florida parishes, was for years a severe source of pollution, keeping the waterways muddy and turbid for miles below the site of the operation. Under the almost constant checking and prodding of the Water Pollution Control Division this condition has improved greatly.

Complaints from fishermen about polluting gravel operations an invaluable aid to the Division and a sure indication of the extent of pollution, were fewer this past year than ever before.

Jack Britt

Muddy discharge of this stream into the Mississippi River is a result of gravel mining.

Jack Britt

Part of the treatment of paper mill waste liquids —aeration.

One of the big gaps in the Louisiana pollution control picture concerns municipal wastes—the discharge of raw sewage into streams. Until just recently only ONE city or town in the state treated such wastes before disposing of them.

Now, however, under the impetus provided by matching federal grants, many municipal waste treatment facilities are either in the planning stage or under construction. More should be!

Many Louisiana fishing waters are relatively free of pollution, but only constant effort will keep them that way. Where pollution does exist, constant effort to end it should continue, for much of it will become more severe as time passes.

One of the realities of our age is that the technology of manufacturing things which make life better has far outdistanced the technology of treating the waste products resulting from that manufacture. Treatment methods simply leave much to be desired.

Another reality of our age is that pollution abatement and control in Louisiana—as throughout the nation—can be no better than the pollution laws of the state and the popular support of the people.

We have instances in Louisiana where residents

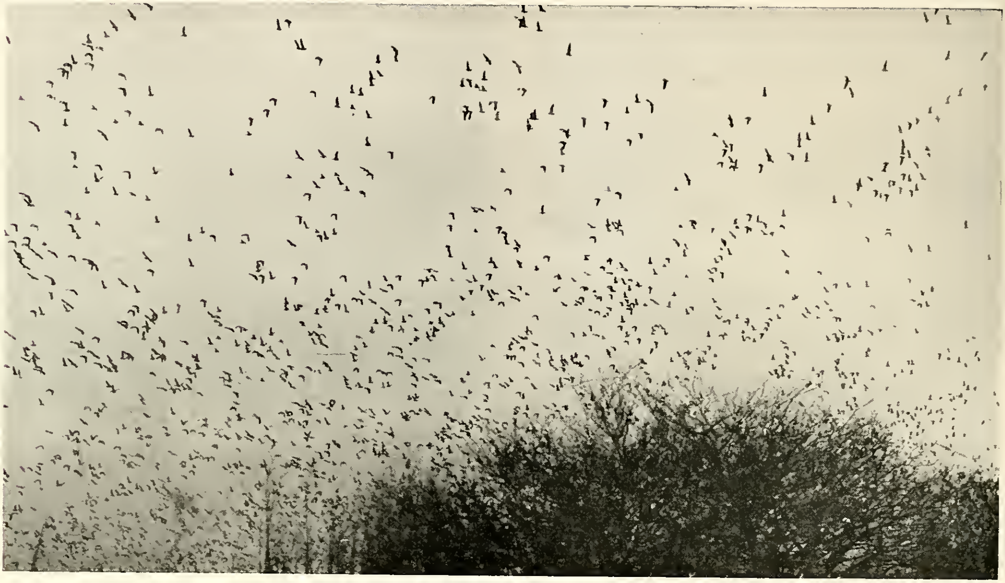
(Continued on page 24)

The rugged marsh buggy trudges on to goose country.

WHERE The Wild Goose Goes!

(Photo feature by Steve Harmon and Jack Britt)

Hundreds of thousands of blue and snow geese wing their way over the Chenier on way to feeding grounds in the marsh.

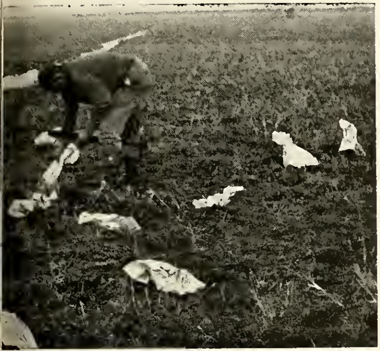


Gliding in, the geese are not concerned with the nearby photographer; seconds later they were on the ground feeding.

This small flock of blues and snows drop down for a rest in cattle grazing grounds near Grand Chenier.

A good retriever saves wear and tear on the hunter and lessens the chance of a cripple getting away.

Newspapers are used as decoys.



With a limit of mixed blues and snows, the hunter leaves the blind and water for the marsh and camp.

The morning hunt begins in an improvised blind made from native marsh grasses. A shot is fired and the first goose lands in the bag.

Tired, exhausted and weary, but still excited over the morning hunt, the Louisiana goose hunter nears the marsh buggy for return to camping grounds.

CLEAN WATERS

(Continued from page 21)

of an area demanded pollution control . . . but then demanded that the pollution be allowed to continue. Their change of mind resulted when they learned that enforcement of the pollution law would result in closure of the polluting industry, upon which much of the economy of the area depended.

Many of the pollution ills, we have, just grew gradually with the growth of the state. Ending them overnight is impossible, and would bring chaos if it were, but an orderly and fair program of doing so over a period of time is imperative.

Equally important, or more so, is that we prevent new pollution loads from being added to our waterways. We must not let our zest for new industry lessen our insistence upon adequate treatment of wastes.

Do not think, let me add, that your personal fight against pollution will be purely an academic one. You may not own a paper mill, an oil well, a chemical plant, a sugar factory, or a gravel mine, but the odds are good that all of us will have the opportunity to share in the cost of municipal waste treatment in the near future.

Your help and support is essential in the efforts of the Wild Life and Fisheries Commission and the Stream Control Commission to maintain Louisiana's short interval between bites. ✠

Wildlife Shorts!

Another broad and promising vista opened to Louisiana sport and commercial fishermen with the discovery of vast schools of tuna in the Gulf of Mexico. As exploratory work of the U. S. Fish and Wildlife Service was followed up by the Louisiana Wild Life and Fisheries Commission, and later by the sportsmen of Louisiana, it became evident that another source of industry accompanied by kindred recreation was destined to be opened.

Insofar as tuna are concerned, trial packs have proved the Gulf tuna are equal, if not a little better, in flavor and texture than those of the West Coast.

Research established that these fish breed in the Gulf and hundreds of tuna taken during research operations were found to contain ripened roe.

It was this initial research that revealed the presence of numbers of white marlin, blue marlin, mako sharks, giant bull dolphin and elusive highly-popular wahoo.

Along with other commercial fisheries operations is the Louisiana oyster industry—one that provides the nation's finest oysters. It is a unique combination of both fresh and salt water mingled by Louisiana's geographical location that produces a flavor not found in oysters from any other state.

Wildlife Shorts!

Louisiana's geographical location and diversified terrain, varying from hardwood timber stands, swamp bottoms and velvet-green pine lands to gold and green marshes, provides possibly the greatest outdoor recreational opportunities of any state in the country.

This unusual combination of fields, forests and marshes—laced together by thousands of miles of rivers, lakes, bays and bayous—provides unlimited and diversified hunting, fishing and boating in Louisiana.

The southern reaches of Louisiana, fronting on the Gulf of Mexico, are gateways to sport fishing challenging any offered by other states. In the interior of the state, sportsmen find top fresh water fishing sport. Hunting is enjoyed, in season, throughout the state. Hunting seasons generally extend for a total of five months in the year, beginning as early as September 1, and ending as late as February.

This unique and varied expanse of land, forest, fresh and salt water, fringed by coastal marshes, is also a prime example of how industry and recreation go hand in hand throughout Louisiana.

The southern parishes of Louisiana produce the bulk of the country's furbearing animals—more commercial pelts than all of the provinces of Canada. Contrary to popular opinion, this is factual, and primarily due to muskrat and nutria production in the state's 4,000,000 sprawling acres of marshes.

Along with muskrat and nutria; mink, raccoon, opossum, otter, skunk, fox and cat pelts swell the aggregate fur trade to a multi-million dollar figure. Louisiana alligator hides bring premium prices in domestic and world markets.

In Louisiana, a sportsmen's paradise, the bayous, lakes and bays spread over this underground wealth teem with both commercial and sport fish. The passes of the mighty Mississippi River are jumping-off spots for big game fish ranging from slim, streamlined sailfish to heavyweight blue marlin. Bull dolphin, tuna, king mackerel, wahoo and tarpon are plentiful, along with the smaller but none-the-less popular game fish.

Offshore drilling rigs and platforms built by the oil companies have changed the migratory patterns of many fish. Relatively recent newcomers include giant jewfish, spadefish, barracuda, and the ever-popular and highly desired pompano.

The Bird of the month

Charles R. Shaw

CARACARA

Caracara cheriway

COMMONLY called Audubon's Caracara or Mexican Eagle, this distinctive bird believes his relationship to those masters of the air, the falcons, by his habit of spending much of his time on the ground, using his long legs, and by his diet which includes a large percentage of carrion. Because of his liking for food that is already dead, obviously dead in fact, he is sometimes called the Mexican Buzzard. This appellation is reasonably well founded in spite of the fact that Mexico has plenty of true vultures to lay claim to the name.

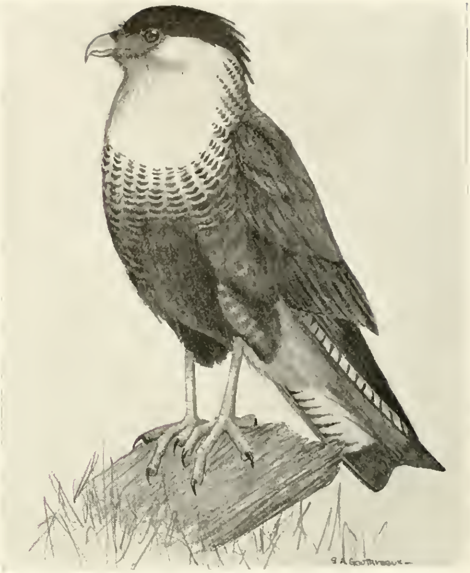
In appearance Audubon's Caracara presents well defined black and white contrasts which set him off from the rest of the couple of dozen members of the order *Falconiformes* which occur in Louisiana. The black cap on the top of the head may assume the appearance of a rather rough and ragged crest. The neck is quite white and the lower breast and belly are blackish again, then a white appearing tail set off by the dark terminal band. In flight not only the neck and tail show white but there also appears to be a white patch near the end of each wing.

The white neck, which is rather large for a hawk, somewhat balances the large white tail, and the white patches of the wing tips, and helps to give the bird a somewhat cross-like appearance when soaring. The usual flight consists of a few rapid wing beats followed by a short period of gliding and generally is fairly close to the ground. However at times he emulates his dining companions the vultures and may soar high on the thermal currents.

Although admittedly rare in Louisiana there are reliable reports of Audubon's Caracara nesting in southwest Louisiana on the Rucie Moore ranch in Cameron Parish. As there is no general public access to this area and the owners are very much interested in all aspects of conservation the birds remain relatively undisturbed.

In Florida they seem to prefer the top of low palm trees and my personal observations indicate that this is true in parts of Mexico as well. In Texas a wide variety of trees may be used but normally the nest is located in the top of a relatively low growing tree. The Caracara is a bird of the plains and prairies rather than woodlands and is normally found in open situations where he can scan a wide area in search of food.

The nest is rather roughly constructed but with a lot of material such as weed stems, etc. and the normal clutch of two or three whitish eggs are spotted, splotched or scrawled with various shades of brown. The nesting season is quite early in common with many of the raptores.



The markings of the young birds present a striking pattern also but are in shades of brown on a palish buff background. The juvenile plumage persists for the first season and there appears to be an intermediate stage the following year before the bird finally assumes the black and white appearance of the adult.

In spite of his reputation as a carrion eater the Caracara does indulge in quite a gastronomic variety, particularly favoring fish and frogs. Small mammals of many species, snakes, lizards, turtles, crayfish, young birds, and many of the larger types of insects and ground dwelling invertibrates are readily caught and eaten by this voracious bird. In Mexico he enjoys quite a reputation as a snake eater and is so represented in traditional art, on banners, etc. He also may pirate food from pelicans, eagles and other large hawks by attacking them from above and forcing them to drop their prey.

Hunters or observers in the southwestern areas of the state should be on the lookout for this rather rare Louisiana resident, particularly for signs of nesting. It is protected by Louisiana law and of course cannot be considered harmful to our game populations. ✠

RETURN REQUESTED
Louisiana Wild Life and Fisheries Commission
400 Royal Street
New Orleans, Louisiana 70130

(Photo by Steve Harmon)

WINTER TIME IS FISHING TIME IN LOUISIANA

A String of Bluegill

Shotguns and rifles may sound off but there is little slackening of fishing pressure in Louisiana's chain of lakes, streams, bayous and rivers and there is no better sport than catching the wily bluegill on a limber flyrod . . . and catching them whether it be Spring or Fall, Summer or Winter. This hefty string came from Old River near Morganza last Winter.